




# UNITED STATES PATENT AND TRADEMARK OFFICE

5K  
UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

| APPLICATION NO.                                                            | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO.  | CONFIRMATION NO. |
|----------------------------------------------------------------------------|-------------|----------------------|----------------------|------------------|
| 09/778,922                                                                 | 02/08/2001  | Jyrki Hiltunen       | 365-494P             | 4521             |
| 2292                                                                       | 7590        | 01/28/2004           | EXAMINER             |                  |
| BIRCH STEWART KOLASCH & BIRCH<br>PO BOX 747<br>FALLS CHURCH, VA 22040-0747 |             |                      | GRIFFIN, WALTER DEAN |                  |
|                                                                            |             |                      | ART UNIT             | PAPER NUMBER     |
|                                                                            |             |                      | 1764                 |                  |

DATE MAILED: 01/28/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                                      |                                                                                                                           |  |
|------------------------------|--------------------------------------|---------------------------------------------------------------------------------------------------------------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b><br>09/778,922 | <b>Applicant(s)</b><br>HILTUNEN, JYRKI  |  |
|                              | <b>Examiner</b><br>Walter D. Griffin | <b>Art Unit</b><br>1764                                                                                                   |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 13 November 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 and 22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 and 22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. §§ 119 and 120**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
     a) ☒ All    b) ☐ Some \* c) ☐ None of:  
         1. ☒ Certified copies of the priority documents have been received.  
         2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
         3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
     \* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
     a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

**Attachment(s)**

- |                                                                                              |                                                                             |
|----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                             | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)         | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other:                                          |

## **DETAILED ACTION**

### ***Response to Amendment***

The claim objections and rejections as described in paper no.14 have been withdrawn in view of the amendment filed on November 13, 2003.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 18 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 18 is indefinite because the expression "the cyclone chamber" lacks proper antecedent basis in claim 13.

### ***Claim Objections***

Claim 22 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. The limitation that the guide vanes are straight is already contained in claim 13.

*Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-20 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Davenport et al. (US 2,553,175) in view of DE 914701.

The Davenport reference discloses a process for separating solid particles from a gaseous stream. The process comprises passing a gaseous stream containing solid particles into a separator apparatus that contains at least two multiple inlet cyclones (35) connected in a parallel configuration whereby the particles are separated from the gas by centrifugal force. The gaseous stream is a flue gas from a primary cyclone separator. The Davenport reference also discloses an apparatus for separating solid particles from a gaseous stream. The apparatus comprises at least two multiple inlet cyclones (35) connected in a parallel configuration. These multiple inlet cyclones have a common gas inlet channel (42) formed between two concentric cylindrical surfaces. This gas inlet channel has a circular cross section. The cyclones operate in the interior

Art Unit: 1764

space of the gas inlet channel. Center conduits of the cyclones pass through a common gas inlet channel. The dip legs of the cyclones discharge into a common conduit. The cyclones contain openings formed by diametrically opposed substantially parallel tangential extensions. See the figures and col. 2, line 32 through col. 5, line 25.

The Davenport reference does not disclose that the gaseous stream to be treated is obtained from a secondary separator apparatus. It also does not disclose the claimed source of the gaseous stream as in claims 7 and 9, does not disclose the dust concentration as in claim 10, and does not disclose that the separator is connected to a fluidized catalytic process apparatus. The Davenport reference also does not disclose the guide vanes.

The DE 914701 reference discloses guide vanes in a cyclonic separator. See entire document.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process and apparatus of Davenport by including the guide vanes of the DE 914701 reference because efficient separation of solids from gas will be achieved.

It also would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of Davenport by using a gaseous stream from a secondary separator because any gas that contains solids would be effectively treated regardless of the number of prior separations of the solids from the gas.

It also would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process and apparatus of Davenport by utilizing the separator to separate solids such as cracking catalysts or other particles from gases resulting from

Art Unit: 1764

fluidized bed processes and apparatus because any gas that contains particles would be effectively treated in the separator regardless of its source.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of Davenport to obtain the claimed dust concentrations because one would adjust conditions in order to maximize the desired effect of dust removal.

### *Response to Arguments*

The argument that the examiner has not cited any secondary references or other teachings to support some of the obviousness statements is not persuasive because the examiner maintains that one of ordinary skill would realize that the process of Davenport would effectively treat any gas stream that contains solids.

The argument that one would not be motivated to combine the Davenport and DE references because the cyclone of Davenport would not work if turned upside down as in the DE reference is not persuasive. The DE reference is used only show that the use of vanes results in efficient separation. This advantage provides the motivation to include vanes in the Davenport apparatus regardless of the comparative orientations of the DE and Davenport apparatus.

### *Conclusion*

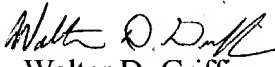
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Walter D. Griffin whose telephone number is (571) 272-1447.

Art Unit: 1764

The examiner can normally be reached on Monday-Friday 6:30 to 4:00 with alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on (571) 272-1444. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0651.

  
Walter D. Griffin  
Primary Examiner  
Art Unit 1764

WG  
January 23, 2004